

## Smart Grids

February 2014

**Deciphering heterogeneous data from distributed sensor networks in order to support intelligent, efficient, and sustainable public utility services.**

Current advancements in embedded systems, communications and sensing technologies, have made it possible to acquire and process large amounts of real-time data from **distributed sensor networks**. These networks can therefore be used to **monitor** and **manage** large-spread utility services such as the power grid, commonly known as the *smart grid*. However, this concept can also be applied to create other *smart utilities* such as district heating, and public transportation. The driving force behind smart utilities are **aware intelligent systems** that can **process** large amounts of data, **extract** relevant information, **plan** according to a given situation, and then **act** in a timely manner in order to optimize the **efficiency** and **sustainability** of these services.



### EIS-IGS Project

Together with Halmstad Energi och Miljö (HEM) AB, we will investigate methods for analyzing energy consumption data from smart electricity meters and other intelligent sensors distributed on the local grid. The overall goal of the project is to investigate both data-driven and knowledge-driven methods for predicting critical failures (blackouts), understanding the needs for routine maintenance, detecting deviations in usage and operations in order to support high quality, sustainable services. This project is part of the EIS industrial graduate school (IGS), jointly funded by HEM, the Knowledge Foundation, and Halmstad University. This project will also strengthen our collaboration with the Power Engineering Lab at Portland State University (PSU).

### Other activities:

Anita Sant'Anna (HH) and Robert Bass (PSU) have a joint publication in the upcoming International Conference on Smart Grids and Green IT Systems – Barcelona, April 2014.



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